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## Part I: General Overview of Business

- The mission of the Refuge is to actively protect, restore, reconstruct and manage the native habitats existing on the refuge prior to Euro-American settlement.
- Services include improving land for wildlife, outdoor recreation, environmental education, increasing scientific knowledge of the prairie

## Part II: Job Specifics

The Prairie is built on old farmland which had been put on top of historic prairie. The time it spent as a farmland changed the landscape because of how the farmers altered it to change the water runoff. The landscape, specifically elevations, impacts the water distribution and how the water distribution in turn impacts the landscape back as well as the plant and animal life. The division (me) has been working to locate these sites for future management because they are unnatural to the prairie and over time will pull it further and further from its historical form. This can encourage invasive species and species of other biomes to infiltrate the prairie.

## Part III: Introduce the Problem

Problem - How do we locate unnatural erosion in the prairie, and how do we slow or prevent its effects  
How can we use what we learned in the prairie to help with the restoration project of Easter Lake?

- Easter lake is filling with sediment because there is so much runoff from surrounding areas making its way into the lake. Preventing erosion in this area could keep the lake in better shape.
- Specifically how do we fix Mr. Gustas' back yard to stop his house from falling into the creek developing in the back yard

## Part IV: Background

Students need to learn about NGSS standard HS-ESS-2-5:  
- Plan and conduct an investigation of the properties of water and its effects on Earth materials and surface processes.

Students need to understand what properties of water allow it to shape our landscape. They also need to know that gravity pulls down, so water usually flows downhill except in the Nile where we can all see that it flows South to North, indicating that it is flowing up and defying gravity. Students will explore the connections between plant life erosion, and how erosion shapes and changes our world.

This section could also lead into standard HS-ESS2-7  
Construct an argument based on evidence about the simultaneous coevolution of Earth's systems and life on Earth.

## Part V: Business Solution

The Easter Lake project is using the following solutions to slow runoff and reduce sediment:

- Erosion tubes that slow the water flow
- Growing plants whose roots will help the ground stay in place. The deep tough roots are best.
- Erosion mats that hold the land in place while waiting for the plants to grow.
- Filling water paths to disperse the water into different, more widespread paths. Water tends to follow the easiest route so it all ends up going over the same path over and over.
- Rock tunnels that filter sediment before entering the lake

## Part VI: Student Solutions

I predict the students will hunt for ways to slow the water, to strengthen the land and to filter the sediment. The nice part about the project is that those three things I listed are relatively simple to come to that conclusion, but there are so many creative ways you can accomplish those. I'd like to get them some erosion tables to simulate and display their solutions.